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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,311	05/31/2001	David Kar Ling Lo	13004US01	4548

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EXAMINER

TALBOT, BRIAN K

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 01/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/872,311

Applicant(s)

LO ET AL.

Examiner

Brian K Talbot

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-15 and 21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-15 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/13/03 has been entered.
2. The previously un-entered amendment filed 8/28/03 has been considered and entered per filing of the RCE on 11/13/03. Claims 12,16-20 have been canceled. Claim 21 has been added. Claims 1-11,13-15 and 21 remain in the application.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 103***

4. Claims 1-4,6-11,13-15 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al. (5,935,643) or Breault et al. (5,732,463) in combination with JP-201-38268 or Maricle et al. (4,849,253) further in combination with either Koschany et al. (6,183,898 B1) or JP 9-180,729.

Song et al. (5,935,643) and Breault et al. (5,732,463) teach method of manufacturing electrode for fuel cells whereby a coating is applied to a porous substrate, dried, rolled and sintered to form the electrode. The rollers are placed having a gap distance and a protecting film is situated between the electrode and the roller to avoid sticking during compaction.

Song et al. (5,935,643) or Breault et al. (5,732,463) fail to teach that the process is continuous.

It is the Examiner's position that one skilled in the art at the time the invention was made would have had a reasonable expectation that the above processes would produce the expected results in either a continuous or non-continuous process.

Song et al. (5,935,643) and Breault et al. (5,732,463) fail to teach the coating having a liquid component during the rolling/compacting step.

JP-201-38268 teaches manufacturing a fuel cell electrode whereby a liquid mixture is applied to a heated roller and then pressing the liquid mixture to form the electrode. While the reference teaches a "heated" roller, the reference does not "completely dry" the coating prior to pressing.

Maricle et al. (4,849,253) teaches method of making electrochemical cell electrode whereby the catalyst layer is applied and compacted prior to being sintered to form the electrode (Abstract and Fig. 1).

Therefore, it would have been obvious for one skilled in the art at the time the invention was made to have modified either Song et al. (5,935,643) or Breault et al. (5,732,463) process by not completely drying the coating prior to pressing/compacting as evidenced by either JP-201-38268 or Maricle et al. (4,849,253) with the expectation of achieving similar success.

Song et al. (5,935,643) or Breault et al. (5,732,463) in combination with JP-201-38268 or Maricle et al. (4,849,253) fail to teach forming a fluid diffusion layer substantially free of electrocatalysts (i.e. an electrocatalyst layer is applied to a formed fluid diffusion layer).

Koschany et al. (6,183,898 B1) (abstract and examples 1-4) or JP 9-180,729 (abstract) both teach fuel cells having a gas diffusion layer whereby a catalyst layer is applied thereto for the formation of the electrode.

Therefore, it would have been obvious for one skilled in the art at the time the invention was made to have utilized Song et al. (5,935,643) or Breault et al. (5,732,463) process by not completely drying the coating prior to pressing/compacting as evidenced by either JP-201-38268 or Maricle et al. (4,849,253) process to have formed the diffusion layer separately and then the catalyst layer as evidenced by Koschany et al. (6,183,898 B1) or JP 9-180,729.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Song et al. (5,935,643) or Breault et al. (5,732,463) in combination with JP-201-38268 or Maricle et al. (4,849,253) further in combination with Koschany et al. (6,183,898 B1) or JP 9-180,729 still further in combination with Campbell et al. (5,863,673).

Song et al. (5,935,643) or Breault et al. (5,732,463) in combination with JP-201-38268 or Maricle et al. (4,849,253) further in combination with Koschany et al. (6,183,898 B1) or JP 9-180,729 fail to teach pre-treating the substrate with a hydrophobic polymer before applying the coating material.

Campbell et al. (5,863,673) teaches forming a porous electrode for a fuel cell whereby a hydrophobic coating is applied prior to the filling step. (col. 3, lines 64-67)

Therefore, it would have been obvious for one skilled in the art at the time the invention was made to have modified Song et al. (5,935,643) or Breault et al. (5,732,463) in combination with JP-201-38268 or Maricle et al. (4,849,253) further in combination with Koschany et al. (6,183,898 B1) or JP 9-180,729 process with a hydrophobic coating as evidenced by Campbell et al. (5,863,673) with the expectation of achieving similar results.

***Response to Amendment***

5. Applicant's arguments filed 8/28/03 have been fully considered but they are not persuasive.

Applicant argued that the prior art failed to teach forming a fluid diffusion layer substantially free of electrocatalyst, i.e. forming a catalyst layer thereto to form the electrode.

Koschany et al. (6,183,898 B1) or JP 9-180,729 both teach fuel cells which include separate fluid diffusion layers and catalyst layers to form the electrode.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K Talbot whose telephone number is (571) 272-1428. The examiner can normally be reached on Monday-Friday 6AM-3PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1428.



Brian K Talbot  
Primary Examiner  
Art Unit 1762

BKT